भारतीय मानक

Indian Standard

IS 17230 : 2019

वोटर वेरीफ़ाएबल पेपर ऑडिट ट्रेल (वीवीपैट) मुद्रक के भंडारण, परिवहन तथा ढुलाई के किए प्लास्टिक कैरि केस — विशिष्टि

Plastic Carry Case for Storage, Transportation and Carriage of Voter Verifiable Paper Audit Trail (VVPAT) Printer — Specification

ICS 83.140.99

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October 2019 **Price Group 4**

Plastics Sectional Committee, PCD 12

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Plastics Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

Voter Verifiable Paper Audit Trail (VVPAT) printer is being used during election process to verify that the vote polled by a voter goes to the correct candidate. VVPAT printer is a second line of verification and gives instant feedback to the voter showing that the vote polled has in fact been allotted against the candidate chosen. For storage, transportation and carriage of voter verifiable paper audit trail (VVPAT) printer, plastics carry cases are used.

Based on the recommendations of Election Commission of India, the Committee has decided to formulate Indian Standard on Plastic carry case used for storage, transportation and carriage of voter verifiable paper audit trail (VVPAT) printer.

The composition of the Committee responsible for the formulation of this standard is given at Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standards

SPECIFICATION FOR PLASTIC CARRY CASE FOR STORAGE, TRANSPORTATION AND CARRIAGE OF VOTER VERIFIABLE PAPER AUDIT TRAIL (VVPAT) PRINTER

1 SCOPE

This standard prescribes requirements and methods of sampling and test for carry case used for packing, storage, transportation and handling of voter verifiable paper audit trail (VVPAT) printer. The carry case is intended for use in indoor application only.

2 REFERENCES

The following Indian Standards contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on the subject are encouraged to investigate the possibilities of applying the most recent editions of the standards indicated below:

IS No.	*Title*
397	Method for statistical quality control during production
(Part 1) : 2003	Control charts for variables
(Part 2) : 2003	Control charts for attributes
4905 : 1968	Methods for random sampling
7028	Performance tests for complete, filled transport packages
(Part 1) : 2002	Stacking tests using static load
(Part 2) : 2002	Vibration test at fixed low frequency
(Part 3) : 2002	Horizontal impact tests (horizontal or inclined test; pendulum test)
(Part 4) : 1987	Vertical impact drop test
(Part 5) : 1987	Rolling test (*first revision*)
(Part 8) : 2002	Water spray test
7031 : 2002	Method of conditioning for testing of complete, filled transport packages
13360	Plastics — Methods of testing
(Part 3/Sec 10) : 2016	Physical and dimensional properties, Section 10 Determination of density of non-cellular plastics — Immersion method, liquid pyknometer method and titration method
(Part 4/Sec 1) : 2000	Theological properties, Section 1 Determination of the melt mass-flow rate (MFR) and the melt volume-flow Rate (MVR) of thermoplastics (*first revision*)
(Part 5/Sec 1) : 2018	Mechanical properties, Section 1 Determination of tensile properties — General requirements (*first revision*)
(Part 5/Sec 4) : 2013	Mechanical properties, Section 4 Determination of izod impact strength (*first revision*)
(Part 5/Sec 7) : 2017	Mechanical properties, Section 7 Determination of flexural properties (*first revision*)
(Part 6/Sec 3) : 2017	Thermal properties, Section 3 Determination of temperature of deflection under load — General test method (*second revision*)
(Part 6/Sec 17) : 2017	Thermal properties, Section 17 Determination of temperature of deflection under load — Plastics and ebonite (*second revision*)
(Part 8/Sec 8) : 2004	Permanence/chemical properties, Section 8 Determination of ash — General methods (*first revision*)

3 MATERIAL

3.1 Basic Resin

Polypropylene and its copolymer.

3.2 Polypropylene and its copolymer or its compounded material used for the manufacture of top housing, bottom housing, latches and handle of the carry case shall confirm to the parameters mentioned in Table 1.

3.3 Cushioning Material

Adequate cushioning shall be provided to eliminate/reduce transfer of the impact to VVPAT printer. Any suitable material as agreed between the manufacturer and the purchaser may be used.

Table 1 Characteristics of Polypropylene and its Copolymer or its Compounded Material

(*Clause* 3.2)

Sl No.	Characteristics	Requirements	Test Method
(1)	(2)	(3)	
i)	Melt flow index at 2.16 kg load and 230° C, gm/10 min	7-13	IS 13360 (Part 4/Sec 1)
ii)	Density at 27°C, gm/ cc	0.91 to 0.94	IS 13360 (Part 3/ Sec 10)
iii)	Flexural modulus, MPa, *Min*	850	IS 13360 (Part 5/Sec 7)
iv)	Izod impact strength (notched), J/m, *Min*	500	IS 13360 (Part 5/ Sec 4)
v)	Tensile strength, *Min*, MPa	20	IS 13360 (Part 5/Sec 1)
vi)	Filler/ ash content, percent by mass, *Max*	5 percent	IS 13360 (Part 8 / Sec 8)
vii)	Heat deflection temperature at fiber stress 0.45 MPa, *Min*	85	Method B of IS 13360 (Part 6 / Sec 17)

3.4 Gasket Material

Nitrile butadiene rubber (NBR).

3.5 Metal Parts (Hinge)

Main hinge pin and handle hinge pins of stainless steel grade 304.

3.6 Latches and Handle

ABS, polypropylene and its copolymer or its compounded material.

3.7 Pigment and Colorants

The pigments and colorants used shall be as agreed between manufacturer and purchaser.

4 MANUFACTURE, WORKMANSHIP AND FINISH

4.1 The carry case shall be manufactured by injection moulding process and shall be of suitable design, shape and colour as agreed to between the manufacturer and purchaser. However, the shape should be such that it is easily stackable.

4.2 The carry case consists of top and bottom housings assembled with hinge pin and latches. The carry case is used for packing, storage, transportation and handling of VVPAT printer with suitable provision of positioning, locking/sealing arrangements and fitted with handle. Fig. 1 illustrate typical examples of carry case. Fig. 1 is illustrative and for information only.

4.3 The VVPAT carry case shall be smooth in construction, shall not have any sharp edges or other constructional defects. The carry case shall be free from visual defects like flow lines, poor color dispersion, black and white spots, embedded foreign matters, waviness, pits, deformed or broken lugs, etc.

4.4 Weight of the carry case as agreed between the manufacturer and purchaser.

5 REQUIREMENTS

5.1 Shape, Size and Dimension

The shape, size and dimension of the carry case so as agreed between the manufacturer and purchaser. Unless otherwise specified, a tolerance of ± 0.50 percent shall be permitted on the length, width and height prescribed for the carry case. The thickness across all the surfaces of the plastic parts of carry case shall be 2.25 to 3.0 mm.

5.2 Stack Load Test

There shall not be any damage, crack or permanent deformation and any other type of failure in the carry case after the test, when tested by method 1 of IS 7028 (Part 1). Use five carry case filled with uniformly distributed equivalent load equal to one printer for stacking on flat and horizontal surface for 24 h.

5.3 Vibration Test

There shall not be any damage, crack or permanent deformation or any other type of failure in the carry case after the test, when tested as per method A of IS 7028 (Part 2). The carry case should be filled with uniformly distributed equivalent load of one printer.

5.4 Impact Test

5.4.1 *Horizontal Impact Test (Pendulum Test Method)*

There shall not be any damage, crack or permanent deformation or any type of failure in the carry case after the test, when tested by the method prescribed in IS 7028 (Part 3). The carry case should be filled with uniformly distributed equivalent load of one printer.

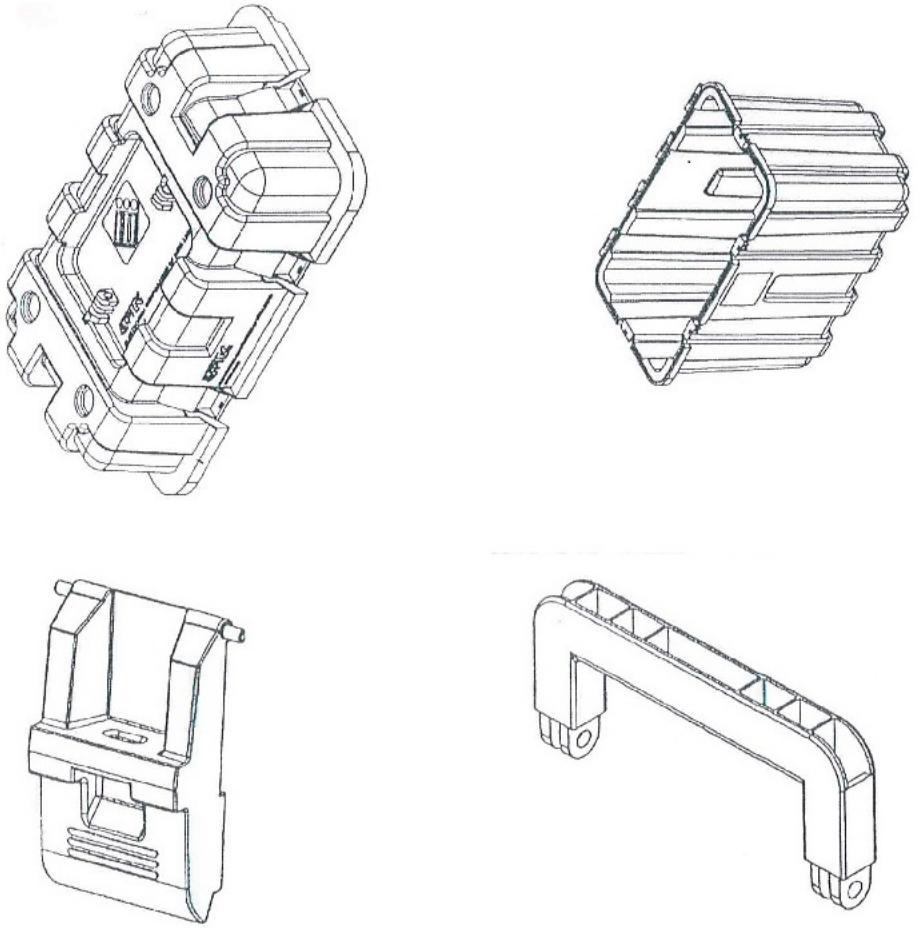

FIG. 1 EXAMPLE OF VVPAT CARRY CASE

5.4.2 *Vertical Impact Drop Test*

There shall not be any damage, crack or permanent deformation or any type of failure in the carry case after the test, when tested by the method prescribed in IS 7028 (Part 4). The drop height shall be 1.0 m and the carry case should be filled with uniformly distributed equivalent load of one printer.

5.5 Rolling Test

There shall not be any damage, crack or permanent deformation or any type of failure in the carry case after the test, when tested by the method prescribed in IS 7028 (Part 5). The carry case should be filled with uniformly distributed equivalent load of one printer.

5.6 Water Spray Test

Water shall not be entered inside the VPPAT carry case when tested by the method A as prescribed in IS 7028 (Part 8) for 30 min.

5.7 Handle Pull Test

The handle of carry case shall subject to pull test at ambient temperature for 30 min with a load equivalent to three times of the weight of one printer.

5.7.1 *Apparatus*

5.7.1.1 *Velcro strap*, to tie the handle of carry case.

5.7.1.2 *Horizontal steel beam*, to hang the carry case.

5.7.1.3 *Uniformly distributed load,* equivalent to the load of three printers.

5.7.2 Put uniformly distributed equivalent load of three printers inside the carry case. Tie the carry case handle with Velcro strap and hang the loaded carry case on the steel beam (*see* Fig. 2). At the end of the test, there shall not be any damage, crack or deformation or any type of failure to the handle or in the carry case.

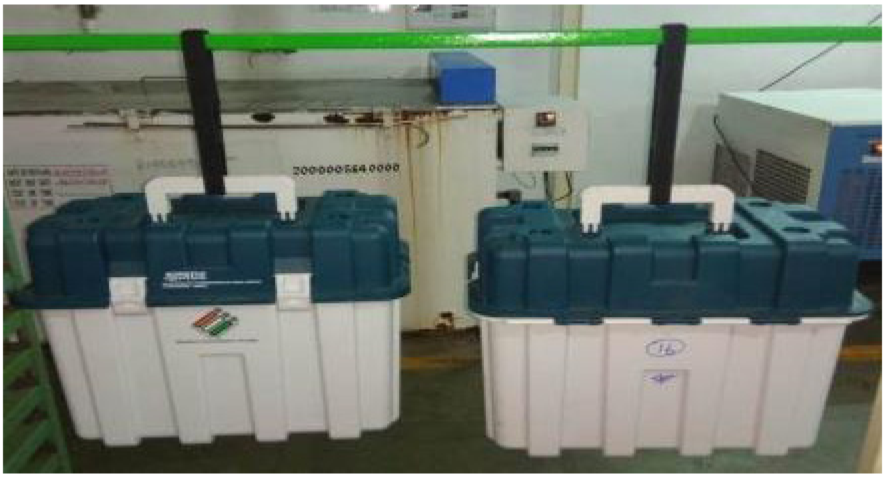

FIG. 2 HANDLE PULL TEST ARRANGEMENT

5.8 De-latching Test

The VVPAT carry case shall be subjected to minimum 50 operations. One opening and closing of carry case shall constitute one operation. The operations shall be carried out continuously. The test shall be conducted at the rate of 20 to 40 operations per minute. At the end of the test, the carry case shall not show any crack or damage to the latchet and shall not be loosen in the latches which lead to damage the printer.

6 CONDITIONING

The carry case shall be conditioned at one of the atmospheric conditions, as agreed between the manufacturer and buyer, as mentioned in Table 2 by the method prescribed in IS 7031.

Table 2 Atmospheric Conditions

(*Clause* 6)

Sl. No.	**Condition**	**Temperature,** (in °C)	**Relative Humidity (RH),** (in Percent)	**Duration** (in h)
(1)	(2)	(3)	(4)	(5)
i)	I	27 ± 2	65 ± 5	24
ii)	II	55 ± 2	—	24
iii)	III	-18 ± 2	—	2

7 PACKING AND MARKING

7.1 The carry case shield shall be suitably packed as agreed to between the purchaser and the supplier.

7.2 Each carry case shall be legibly and indelibly marked with the following:

a) Name and or trade-mark of the manufacturer;
b) Batch number;
c) Month and year of manufacture (DD/MM/YYYY);
d) Best use before…….. (month and year to be declared by the manufacturer); and
e) Any other information required by the statuary authority.

7.2.1 In addition to the above, the following information shall also be given in English/Hindi/regional language and may be included in a separate leaflet placed on the product:

a) Instructions for proper use as intended by the supplier;
b) List of components and required accessories provided with the carry case;
c) Care and maintenance instructions;
d) Recommended storage conditions and life expectancy under those conditions; and
e) Availability of replacement parts (optional).

7.3 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

8 SAMPLING

The samples of the polycarbonate protective shields shall be drawn and the criteria for conformity determined as prescribed in Annex A.

9 STORAGE

The VVPAT carry case with or without printers shall be kept at storage conditions protected from direct sun light or heat.

ANNEX A

(*Clause* 8)

SAMPLING OF VVPAT CARRY CASE

A-0 GENERAL

The object of testing VVPAT carry case by the purchaser is to ensure conformity to the specification, whereas testing by the manufacturer during production is to ensure the conformity by reducing the quality fluctuations to the minimum and thus ensure the conformity of the lot to the specified requirements. A useful guidance can be obtained from IS 397 (Part 1) and IS 397 (Part 2) for the purpose of ensuring the homogeneity of the lot.

A-1 SCALE OF SAMPLING

A-1.1 Lot

In a single consignment, all the carry case of same size and dimensions belonging to the same batch of manufacture shall be grouped together to constitute a lot.

A-1.2 For ascertaining the conformity of the lot to the requirements of this standard, tests shall be carried out on the samples taken from each lot separately.

A-1.3 The number of VVPAT carry case to be selected from each lot shall depend on the size of the lot and shall be in accordance with Table 3.

A-1.4 The VVPAT carry case shall be selected at random from the lot. To ensure the randomness of selection, methods given in IS 4905 may be followed.

A-2 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-2.1 Each of the VVPAT carry case selected according to col 1 and 2 of the Table 2 shall be examined for the tests at **4** and **5.1** of this standard. VVPAT carry case failing in one or more of these requirements shall be considered as defective. The lot shall be considered as satisfying these requirements, if the number of defectives found in the sample does not exceeded the acceptance number given in col 3 of Table 3.

A-2.2 The lot having been found satisfactory according to **A-2.1** shall be subjected to the tests given in **5.2** to **5.8** For this purpose, the number of VVPAT carry case given in col 4 of Table 3 shall be selected from the lot. These may be selected from those already tested according to **A-2.1** and found satisfactory.

A-2.2.1 The lot shall be considered as conforming to the requirements of these characteristics if all the VVPAT carry cases subjected to various destructive tests satisfy the relevant specification requirements.

A-2.3 The lot shall be declared as conforming to the requirements of the specification if **A-2.1** and **A-2.2** are satisfied.

Table 3 Scale of Sampling and Acceptance Number

(*Clauses* A-2.1 *and* A-2.2)

Sl No. (1)	Lot Size in Nos (2)	Sample size (3)	Acceptance Number (4)	Sub Sample Size (5)
i)	Up to 3 000	13	0	3
ii)	3 000 to 5 000	20	1	5
iii)	5 000 to 10 000	32	2	8
iv)	above 10 000	45	3	15

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Plastics Sectional Committee, PCD 12

Organization	*Representative(s)*
Central Institute of Plastics Engineering & Technology (CIPET), Chennai	Prof (Dr) S. K. Nayak (***Chairman***)
Central Institute of Plastics Engineering & Technology (CIPET), Chennai	Dr S. N. Yadav
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All India Plastics Manufacturers Association (AIPMA), New Delhi	Shri Deepak Ballani
Consumer Education Research Centre (CERC), Ahmedabad	Shri Raju D. Desai Shri H. S. Tripathi (*Alternate*)
The Toy Association of India (TAI), New Delhi	Shri Rajesh Arora Shri R. K. Verma (*Alternate*)
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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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